Volcanoes

Exercises

I. Short Answer Questions.

Question 1.
What are known as volcanoes ?
Answer:
Volcanoes are the vents in the earth's crust erupting hot magma from the interior core motivated by endogenic forces.

Question 2.
What is the difference between magma and lava ?
Answer:
Molten material moving under the earth's crust is called magma. When magma comes to the surface of the earth it is known as lava.

Question 3.
Give one example each of an active volcano and a dormant volcano.
Answer:

- **Active Volcano –** Mt. Stromboli and Mt. Etna in Italy
- **Dormant Volcano –** Mt. Kilimanjaro of Africa.

Question 4.
What is the difference between dormant volcano and an extinct volcano ?
Answer:
Dormant volcano can erupt at any interval but extinct volcano can never erupt again.

Question 5.
What is the magma chamber of a volcano ?
Answer:
The magma chamber is created by the molten magma itself by melting the surrounding rocks in the form of a huge chamber.

Question 6.
Name two types of landforms made by volcanoes.
Answer:
Two types of landforms are :

1. **Extrusive landforms :**
   Extrusive landforms include crater composite cones caldere lava platforms.
2. **Intrusive landforms** :
   Intrusive landforms include dykes batholiths laccoliths volcanic hill etc.

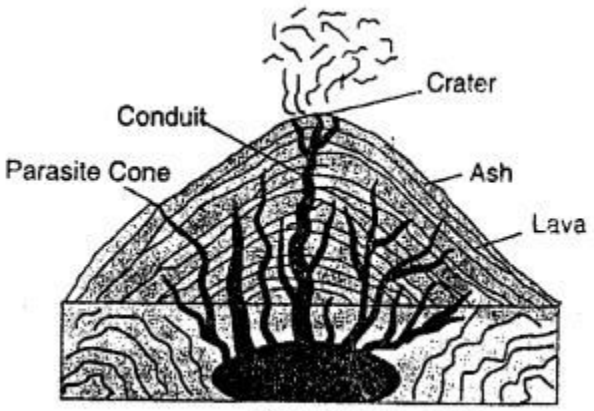
Question 7.
What is called the Pacific Ring of Fire ? Why is it called so ?
Answer:
There are 80% active volcanoes around the Pacific ocean which is called the Ring of Fire.

Question 8.
Name the three types of volcanoes on the basis of the frequency of their eruption.
Answer:
There are three types of volcanoes e.g. active volcano which is still active in erupting magma dormant volcano which erupts in uncertain intervals and extinct volcano which has stopped eruption permanently it is also called dead volcano.

Question 9.
What are known as Shield volcanoes ?
Answer:
A volcanoes erupting with plentiful lava spreading over the surface into several kilometres with huge circumference and taking a shape of shield are called as shield volcanoes.

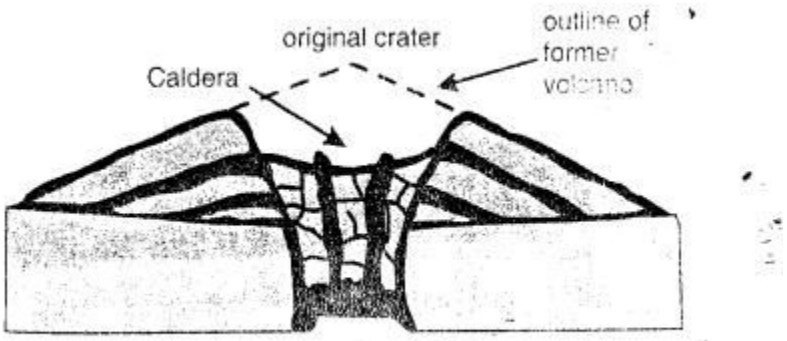
Question 10.
Mention any two extrusive landforms caused by volcanic eruptions.
Answer:

1. **Composite cone :** The volcano which erupts both lava and pyroclastic rocks form alternating layers of these two materials and build up to form composite cones. Examples : Fujiyama in Japan Vesuvius and Stromboli in Italy.



Composite cone

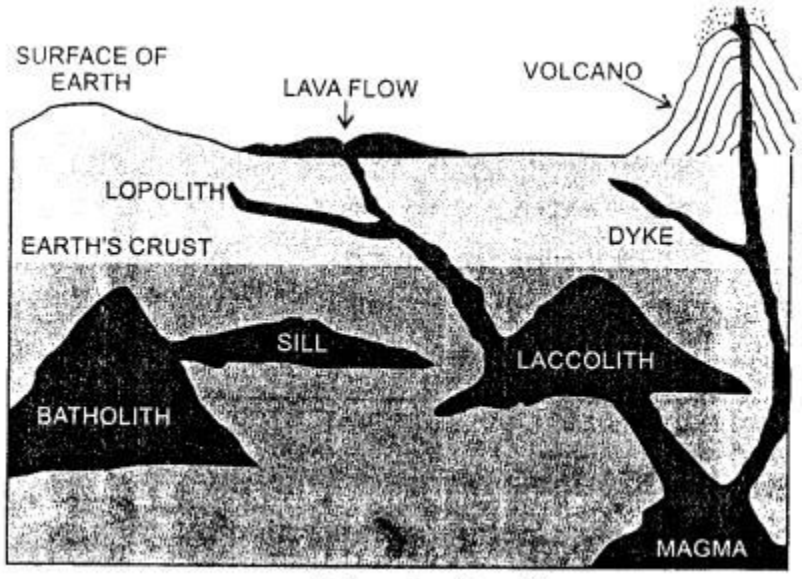
2. **Caldera :** During repeated eruptions the summit of a valcano may be blown up. In its place a large depression called caldera is formed. These are generally formed when the magma chamber is no longer able to emit sufficient magma and results in the collapse of a cone either partly or wholly.



A caldera

Question 11.
Name any two intrusive landforms made by volcanic eruptions.
Answer:

1. **Batholiths :** Large sized intrusions in igenous rocks. They occur at considerable depth and come to the surface in course of mountain building activity.
2. **Laccolith :** These are formed when magma spreads laterally in a dome shape. The dome also forces the overlying strata to bulge upward. The projecting landform is subjected to erosion and denudation. Thus laccolith comes to the surface.



Intrusive Landforms

Question 12.
How are hot springs formed ?
Answer:
The movement of magma heats up the underground water which converts into steam and gushes out through any crack or holes on the crust.

Question 13.
What is called the Pacific Ring of Fire ? Why is it called so ?
Answer:
There are 80% active volcanoes around the Pacific ocean which is called the Ring of Fire.

Question 14.
Give an example each of conical volcano and fissure volcano.
Answer:
Mount Fuji in Japan is a conical volcano and Columbia plateau in South America and Deccan plateau in India are the examples of fissure volcanoes.

Question 15.
What is the difference between dormant volcano and an extinct volcano ?
Answer:
Dormant volcano can erupt at any interval but extinct volcano can never erupt again.

II. Match the following

Column A	Column B
1. Vent	(a) An active volcano.
2. Extinct Volcano	(b) Hot water fountain.
3. Geyser	(c) Dead Volcano.
4. Mt. Stromboli	(d) An opening in the earth's crust through which lava flow
5. Cinder cone	(e) A volcanic landform.

Answer:

Column A	Column B
1. Vent	(d) An opening in the earth's crust through which lava flows.
2. Extinct volcano	(c) Dead volcano
3. Geyser	(b) Hot water fountain
4. Mt. Stromboli	(a) An active volcano
5. Cinder cone	(e) A volcanic landform

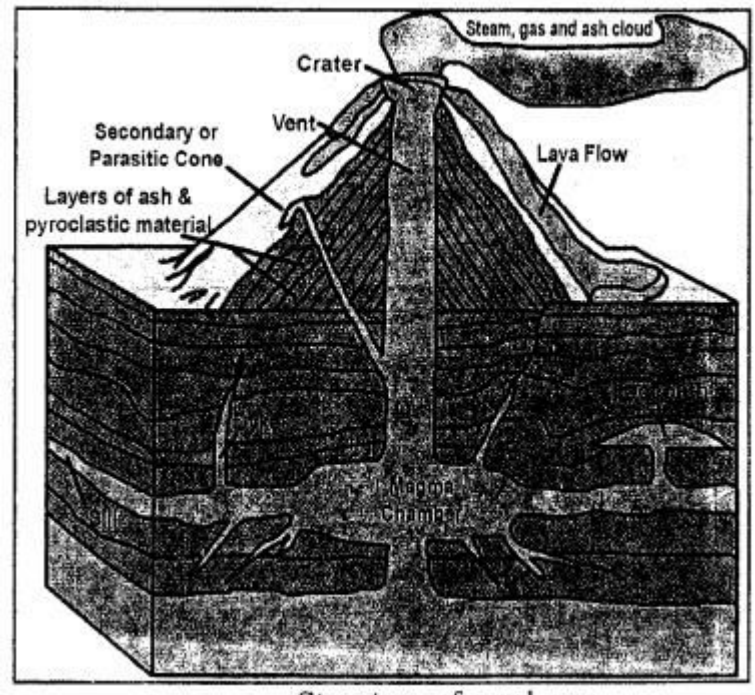
III. Fill in the blanks below

1. The forces arising from the interior of the earth are called **endogenic** forces.
2. The molten rock that reaches the surface of the earth is called **magma.**
3. A lava **shield** is made up of basic lava flows solidified away from the vent.
4. **Vents** are intrusions of igneous rock that are vertical in shape.
5. The Circum-Pacific Belt is also called **Pacific Ring of Fire.**

IV. Long Answer Questions

Question 1.
Explain the various parts of a volcano.
Answer:
A volcano represents some typical parts e.g. the molten rock or magma mostly lava makes the conical body of a volcano. Magma chamber is the source of erupting magma. Vent is the main channel through which the magma erupts outwards. Crater is the mouth or uppermost part of a volcano which is a big hole from which magma erupts

and spreads all over.



Structure of a volcano

Question 2.
Describe the causes of volcanic eruptions.
Answer:
The main causes of volcanic eruptions are the following :

1. **Heat and Pressure inside the Earth :** Temperature and pressure both increase from the surface towards the centre of the earth. Rocks are bad conductors of heat. So the earth's heat does not escape on its own. Instead it melts the rocks and builds up great pressure. The pressure forces the heat to find an escape route through fissures and cracks in the rocks.
2. **Plate Tectonics :** Most volcanic eruptions take place near plate margins. The same forces that cause earthquakes also cause volcanic eruptions.
3. **Magma Chamber :** The molten material while still under the earth's crust melts weak rocks and creates a huge chamber for itself. Fresh magma continues to pour inside the chamber. Since magma contains silicate materials gases and water vapours the pressure always acts vertically upwards. Once a route is found it rises to the surface.

Question 3.
Explain briefly the landforms created by volcanoes on the surface of the earth.
Answer:
The landforms created on earth's surface are called Extrusive Landforms. These include volcanic plateaus volcanic mountains and volcanic plains.

(a) Volcanic Plateaus : These are derived from lava which flows from volcanic eruptions. The Plateau of Peninsular India especially the north western Deccan is an example of lava plateau. Other examples are South African plateau Columbian Plateau and Ethiopian plateau.
(b) Volcanic Mountains : These mountains are built from material ejected from the fissures in the earth's crust. Volcanic mountains are the most diverse because there are great differences in volcanic eruptions as well as the materials they throw up.
(c) Volcanic Plains : These plains are vast and smooth formed by extensive volcanic flooding from volcanic centres. The Western Victorian Plains in Victoria Australia are the finest examples of Volcanic Plains.

Question 4.
Write any three destructive effects of volcanoes.
Answer:
Destructive Effects :

1. When the volcanoes erupt they destroy life and property. The hot lava together with ash and dust destroy not only human beings but also animals as well as plant life.
2. Agricultural fields are covered with layers of volcanic ash and dust making them unsuitable for cultivation.
3. Huge clouds are formed after the eruption of volcanoes causing heavy rains which result in floods and landslides.
4. Volcanoes also emit poisonous gases which pollute the environment and cause health problems.
5. Explosive volcanoes in ocean islands are followed 'by high Tsunami waves. They flood the area and destroy property people animals and crops.

Question 5.
Describe the distribution of volcanoes in the world.
Answer:
Volcanoes are found along the weak zones of the earth's crust where due to continuous tussle by tectonic forces maximum active volcanoes have created. These are

1. **Cirum-Pacific Belt :** It is also known as 'ring of fire due to consisting 75 % active volcanoes of the world.
2. **Mid-World Mountain Belt or Mid Continental Belt :** It extends along the fold mountain zone of Alpine-Himalayan Region. Although this belt is noted for drastic earthquake but these are some of the very destructive volcanoes e.g. Stromboli Vesuvius Mt. Etna Mt. Pelee (West Indies). Out of these belts there are also various volcanoes scattered here and there.

Question 6.
Describe important volcanic landforms on earth.
Answer:
Prominent landforms associated with volcanoes are composite cones built of multiple material erupted out from a volcano. Conical hills are common in volcanic areas Crater lake is formed along the mouth of a conical volcano which is filled with water after cooling down of volcano. Due to repeated eruptions mouth of a volcano is converted into a large depression called caldera. Lavashields are made by large amount of basic lava flows making volcanic shields with a gentle slope.
Lava plateau : is formed by large scale fissure eruptions covering extensive area e.g Columbia plateau in South America and Deccan plateau of India.

Practice Questions (Solved)

Question 1.
Name three causes of volcanic eruptions.
Answer:

- Hot interior of the Earth
- Steam and gases
- Faults and fissures.

Question 2.
Name the largest active volcano in the world.
Answer:
Mauna Loa (Hawaii islands).

Question 3.
Which volcano is known as the 'light house of the Mediterranean ?
Answer:
Stromboli.

Question 4.
Name the three belts where volcanoes are found.
Answer:

- Circum Pacific belt
- Mid-world mountain belt
- African rift valley.

Question 5.
In which belt most of the volcanoes of the world are found ?
Answer:
Circum Pacific Belt.

Question 6.
Name three causes of Earthquakes.
Answer:

- Volcanic eruptions
- Tectonic causes
- Elasticity of Rocks

Question 7.
What is epicentre ?
Answer:
The point on Earth's surface vertically above the focus is called epicentre.

Question 8.
Indicate the world distribution of active volcanoes.
Answer:
There are about 500 active volcanoes. Most of them are confined to Circum-Pacific Belt and Mid World Mountain Belt.

Question 9.
Give two reasons why tremors occur inside the earth?
Answer:

1. Movements of the earth's crust along lines of weakness produces great tremors.
2. During volcanic activity movement of lava beneath the crust also causes tremors inside the earth.

Question 10.
Distinguish between :

1. Seismology and Volcanology.
2. Volcanic Dust and Volcanic Ash.

Answer:

1. **Seismology and Volcanology :** Seismology is the science of study of earthquake and Volcanology is the science of study of volcanic phenomena.

2. **Volcanic Dust and Volcanic Ash :** The finely pulverised fragments of rock are called volcanic ash and very fine particles which blow into air are called volcanic dust.

Question 11.
Describe the materials thrown out during volcanic eruption.
Answer:
The materials thrown out of a volcano due to eruptions are of three types :

1. **Solid materials :-** The solid materials include large fragments of rocks known as volcanic Bombs. The finest particles include cinder volcanic ash dust.
2. **Liquid materials :-** The liquid materials include basic lava and Acid lava. Acid lava has more silica while Basic lava has low content of Silica.
3. **Gaseous materials :-** The gaseous material is mainly composed of steam. The other gases include Oxygen Hydrogen Sulphuric acid Carbon dioxide etc.

Question 12.
Describe the effect of volcanic eruption of Karakatoa in 1883.
Answer:
Karakatoa island is situated between the islands of Java and Sumatra in the Sunda strait. It suddenly erupted in 1883. The top of the mountain was blown away by the explosion 16 metres high tidal waves were caused killing 36,000 persons in west Java. Volcanic dust rose to a height of about 27 kilometres. This dust encircled the globe for 3 years. Its effect caused strange sunrise and sunset conditions.

Question 13.
Why is volcanic activity often associated with mountain building ?
Answer:
Most of the active volcanoes are formed along the fold mountains such as the Himalayas, The Alps, The Andes etc. Fold mountains have been formed by mountain building movements. These involve intense folding and faulting which mark lines of weakness on the surface. Most of the eruptions take place along these lines of weak.

Question 14.
Describe the materials thrown out during volcanic eruptions.
Answer:
The materials thrown out of a volcano due to eruptions are of three types :

1. Solid Materials : The solid materials include large fragments of rocks known as volcanic bombs. The finest particles include cinder volcanic ash and dust.
2. Liquid Materials : The liquid materials include Basic lava and Acid lava. Acid lava has more of silica while Basic lava has low content of silica.
3. Gaseous materials : The gaseous material is mainly composed of steam. The other gases include Oxygen Hydrogen Sulphuric acid Carbon dioxide etc.

Describe any three advantages of volcanoes.

1. Many minerals from the interior of the Earth come on to the surface.
2. Fertile soils like Black soil are made by breaking up of lava.
3. Electricity is generated from gases emitted out during volcanic eruptions.

Question 15.
Why are Earthquakes related to volcanoes ?
Answer:
There is a close relationship between an Earthquake and a volcano Earthquakes and volcanoes occur in same belts i.e. mid-world belt and Circum Pacific belt. Their distribution shows a similar pattern. Volcanic eruptions lead to Earthquakes. Volcanic eruptions are the local cause of Earthquakes.

Question 16.
What is a geyser ? Give two of its main characteristics. Name a well known geyser.
Answer:
Geyser : Geysers are fountains of super heated steam and hot water that is usually emitted with an explosion trigged off by gases escaping from below
Main Characteristics of Geysers

1. Water in a geyser gets heated up beyond its boiling point.
2. They may spout to a height of over 150 feet.

A well known geyser is 'Old Faithful' in Yellow Stone National Park of Wyoming. It erupts regularly every hour and attracts a large number of tourists.

Question 17.
State two ways in which lava may come out of the earth's crust giving an example of each type of these volcanic activities.
Answer:
Two main types of volcanic eruptions are :

- Explosive and
- Quiet or Hawaiian.

1. The Explosive eruption are the most violent and destructive Explosion of pent up gases mainly steam cause enormous quantities of magma to be thrown into the air to form great clouds. Example Krakatoa volcano in Sunda Strait in Indonesia erupt in 1883.
2. The Quiet eruption cause and other gases to escape. There is no violent explosion. Lava flows the creaters and flows down the sides of the cone.
   Example : Hawaiian volcanoes and Maupa Loa.

Question 18.

(a) What do you understand by 'Vulcanism' ?
(b) What are 'Volcanoes' ?
(c) How are volcanoes formed ?
(d) Differentiate between active dormant and extinct volcanoes.
(e) What is'magma'?
(f) What do you understand by 'Crater of the Volcano' ?

Answer:

(a) The interior part of the earth is extremely hot temperature upto 2000°C. in which every matter converts into molten form. This molten material 'magma' always tries to burst out whereever it finds any crack or hole in the crust. The process of erupting out of magma is known as 'vulcanism'.
(b) 'Volcanoes' are the outlets of magma through a vent or cracks in the form of a conical volcanic hill or through various holes known as fissure eruption.
(c) Volcanoes are formed by the eruption of magma from the interior and deposited on the land surface and after cooling down take the shape of volcanoes.
(d) Active volcanoes go on erupting magma continuously e.g. stromboli (North of Sicily). Dormant volcanoes erupt in accidental intervals e.g. Mt. Vesuvius in Italy. Extinct volcanoes stop eruption for ever. e.g. Mt. Fujiyama in Japan.
(e) 'Magma' is the one word of several matters erupting out of a volcano e.g. lava, steam, cinderellas, stones, cinder, smoke etc.
(f) Crater of a volcano is the mouth of volcano in its vertex in the form of a circular hole.

Question 19.

(a) Describe the distribution of volcanoes in the world.
(b) What are the influences of volcanic eruptions on man ?

Answer:

(a) Volcanoes are found along the weak zones of the earth's crust where due to continuous tussle by tectonic forces maximum active volcanoes have created. These are :

1. Cirum-Pacific Belt— It is also known as 'ring of fire due to consisting 75% active volcanoes of the world.
2. Mid-World Mountain Belt or Mid Continental Belt— It extends along the fold mountain zone of Alpine-Himalayan Region. Although this belt is noted for drastic earthquake but these are some of the very destructive volcanoes e.g. Stromboli Vesuvius Mt. Etna Mt. Pelee (West Indies). Out of these belts there are also various volcanoes scattered here and there.

(b) The effects of volcanoes on human life are both positive and negative :
Destructive influences : The deposition of lava makes the area very porous which creates water problem. The major flow of hot lava of Etna destroyed the whole area and property in Sicily. Mt. Vesuvius destroyed the city of Pompeii seven times since 79 AD. and the city of Herculaneum.
Constructive Influences : Volcanoes have provided some fertile lands e.g. Java and Deccan plateau and areas of South Brazil. Various precious minerals come out on the upper part of the earth's crust through eruption e.g. Diamonds of Kimberley and gold of Johannesburg in South Africa nickel deposits of Sudbury in Canada.

Question 20.

(a) What is an 'earthquake' ?
(b) Give two major causes of earthquakes.
(c) Describe the world's distribution of earthquakes.
(d) Mention some of the main effects of earthquakes.
(e) Name the major earthquakes of India from 1991 to 1997.

Answer:

(a) An earthquake is tremor or convulsion of the earth's crust due to sudden movement of the crust.
(b) Two major causes of earthquakes are faulting associated with tectonic forces and the movements due to volcanic eruptions.
(c) The earthquakes are distributed along two major belts namely Circum Pacific earthquake belt (Ring of fire) and the Mid-World mountain earthquake belt along the great fold mountain zone.
(d) The destructive effects of earthquakes are very dangerous e.g. disruption of the rocks bed land slides changing the river courses floods tides collapsing of buildings destruction of transport lines and fires in electric wiring etc.
The constructive effects are the creation of additional coastal plains inlets bays for good harbours creation of fissure- openings to form sulphur or hot springs etc.
(e) Major earthquakes of India from 1919 to 1997.

- Latur 1991
- Uttarkashi 1993

Question 21.
What are the following

(a) Fissure type of volcanoes
(b) Spine or plug
(c) Caldera
(d) Mud volcanoes

(e) Epicentre
(f) 'Ring of Fire'
(g) Cinder Cone

Answer:

(a) Some times the volcanic eruption takes place through several small holes which is known as fissure type volcanoes.
(b) The volcanic cone made by the quick solidification of viscous lava and having steep slopes is known as spine or plug.
(c) Caldera is the spacious crater of a volcano created by tremendous eruption. Crater lake in Oregon U.S.A occupies a caldera about 9 kilometre in diameter.
(d) Mud Volcanoes — A volcanic cone made of the mud due to the eruption of muddy water is called a mud volcano.
(e) Epicentre — It is the place of surface position immediately above the origin or focus of an earthquake.
(f) 'Ring of Fire' — It is the belt around the pacific ocean where due to the weak crust 75% of active volcanoes exist forming a huge 'ring of fire' phenomenon.
(g) Cinder Cone — The volcanic cone built of small pieces and fragments of solidified lava and ash is called 'Cinder Cone'.

Question 22.

(a) Distinguish between the following pairs of terms associated with vulcanicity

1. Lava and Magma
2. Acidic Lava and Basic Lava
3. Cinder Cone and Composite Cone
4. Fissure-type Volcanoes and Central-types Volcanoes
5. Crater and Caldera
6. Laccolith and Lapolith
7. Geysers and Hot Springs

(b) Distinguish between the following pairs of terms associated with crustal movement of the earth

1. Graben and Horst
2. Tilted Block mountains and Lifted Block mountains

Answer:

(a)

(i) **Lava**	*(i)* **Magma**
Lava is the black liquid part of the volcanic eruption.	Magma includes all the material coming out of a volcano e.g. lava, stones, cinders, ash, smoke, steam etc.
(ii) **Acidic Lava**	*(ii)* **Basic Lava**
It is rich in silica and poor in iron and magnesium.	It is poor in silica and rich in iron and magnesium.

(iii) **Cinder Cone**	*(iii)* **Composite Cone**
It is made of small pieces and fragments of solidified lava and ash.	It is made of layers of cinders and ash, alternating with layers of lava.
(iv) **Fissure type Volcanoes**	*(iv)* **Central type Volcanoes**
If the vent is of such type that eruption comes out through various holes in a line of long crack, it is called fissure type volcanoes.	If the vent is single and the magma erupting out takes the shape of a significant conical hill, it is known as central type volcanoes.
(v) **Crater**	*(v)* **Caldera**
Crater is the mouth of a volcano at the top of the vent with normal outlet.	Caldera is very large mouth of a volcano which is quite spacious due to big amount and thrust of the eruption.
(vi) **Laccolith**	*(vi)* **Lapolith**
It is a large sill of acid lava with a domelike shape. There are several laccoliths in Utah, U.S.A.	It is a saucer-like shaped feature deposited in shallow basins with the solidificaion of magma e.g. Yellow stone park, U.S.A.

(vii) Geysers	(vii) Hot Springs
In a geyser, hot water and and steam are thrown out at intervals in the form of a fountain. There is an old faithful geyser which erupts out exactly in one hour interval, these are about 100 geysers.	In a hotspring the heated water flows out continuously without any eruptive activity such hot springs are common in Yellow stone park U.S.A.. Badrinath and Mani Karan in India. These hot springs are very healthy for bath.
(b) (i) Graben	**(i) Horst**
It is another name for rift valley, which is trough like submerged park between two horsts (Block mountains).	It is the elevated highland on the both sides of a rift valley, generally flat on the top. Another name for horst is the Block mountain.

(ii) Tilted Block mountain	(ii) Lifted Block mountain
A tilted block mountain has one steep slope and one gentle slope on another side.	A lifted block mountain is bounded by steep slopes on both sides.

Question 23.
Give a brief account of 'Plate Tectonics'.
Answer:
In the beginning all the continents were combined together known as 'Pangasa' which later on splitted away and separated. But still all continental and oceanic plates are sliding upon each other and result in various earthquakes and volcanoes. The continental drifting theory was discovered by German scientist Alfred Wagner in 1912 which supported this plate tectonics to prove the movement of the continental and oceanic plates working for changing the landforms of the crust.

Question 24.
Give reasons for the following

1. The Belts of volcanic activity and earthquakes are roughly the same.
2. Basic lava cones are broader than Acid lava cones.
3. The Circum-Pacific Belt of volcanoes is called 'The Ring of Fire'.

Answer:

1. The volcanoes and earthquakes are associated with each other as every volcanic activity takes place by shaking and breaking the weak crust which naturally creates tremors and earthquakes within the earth's crust.
2. Basic lava cones are formed by liquid lava which expands and covers a large area while the Acid cones are formed by solid material e.g. ash cinders etc which heap up but do not cover large area and form a high conical hill as compared to broad and low volcanic deposits on the surface.
3. The circum-pacific belt is truly known as "The Belt of Fire" or "The Ring of Fire" as 75% active volcanoes erupting fire are located in this belt.

Question 25.

Match the items given in Column A with the correct ones in Column B.

Column A	Column B
(a) A Rift Valley lake	(a) Deccan Trap region of India
(b) A horst	(b) Fujiyama
(c) A basic lava sheet	(c) Tanganiyaka
(d) Composite cones	(d) Black forest plateau
(e) An active volcano	(e) Corndon Hill
(f) A Batholith	(f) The Alps
(g) A Phaccolith	(g) Upland of Britany in France
(h) A young Fold mountain	(h) Stromboli

Answer:

Column A	Column B
(a) A Rift Valley lake	(a) Tanganiyaka
(b) A horst	(b) Black forest plateau
(c) A basic lava sheet	(c) Deccan Trap region of India
(d) Composite cones	(d) Fujiyama
(e) An Active volcano	(e) Stromboli
(f) A Batholith	(f) Upland of Britany in France
(g) A Phaccolith	(g) Corndon Hill
(h) A Young Fold mountain	(h) The Alps

Question 26.
Give one word for each of the following :

1. A narrow block elevated between two normal faults.
2. The funnel shaped hollow at the top of a volcanic cone.
3. The lava which is poor in silica and rich in iron and magnesium.
4. A volcano which has the possibility of erupting in future.
5. A large sill of acid lava which has solidified gradually giving a dome – like shape.
6. A volcano where magma reaches the surface through a vent or a pipe.
7. A volcano whose eruption buried and destroyed two Roman towns.
8. An instrument used for recording all the earth tremors and earthquakes.
9. The surface position immediately above the origin of an earthquake.
10. The region where there are highest number of geysers and hot springs.

Answer:

1. Horst
2. Crater
3. Basic-Lava
4. Dormant Volcano
5. Acid-Lava Dome
6. Central type volcano
7. Vesuvius
8. Seismograph
9. Epicentre
10. Yellow stone park (U.S.A.)

Question 27.

(a) Which type of lavas weather into more fertile soil. Name also one useful feature of volcanicity other than soil fertility.
(b) Which four of the following words are connected with volcanic activity : Karst, crater, drumlin, stalactite, gully, potholesl, ash, basalt, swallow, holes, dyke, domes, bluffs.

Answer:

(a) Basic – type lava sheet weather into fertile soil e.g.Deccan trap soil. Other useful feature of volcanicity is that the precious minerals come out with the magma near the land surface e.g. diamond and gold etc.
(b) Crater, ash, dyke, domes.

Question 28.
What are tectonic movements ? How are these classified?
Answer:
Tectonic movements are changes through earth's natural activities which are known as 'diastrophism'. These movements are of two types e.g. vertical movement and horizontal movement.

Question 29.
Give reasons for the following :

1. Earth movements have modified the Earth's surface.
2. Internal processes are different from external processes.
3. Folding and faulting frequently go together.
4. Earth as a whole does not expand.

Answer:

1. Earth movements like Continental Drift theory changed the whole face of the earth into distinct continents and oceans of today with highest mountains plateaus plains drainage system and so on.
2. Internal processes are associated with tectonic forces resulting in drastic changes e.g. earthquakes volcanoes etc. External processes are carried on by natural agents of change e.g. water wind and ice which produce gradual changes.
3. Folding and Faulting frequently go together because the stress on folding exceeds more than enough then folds break through fault line to two pieces slipping one upon another which is called faulting.
4. Inspite of various changes occurring within the earth it does not expand as it is affected by the centripital force of gravity working towards the centre of the earth.

Question 30.
How the theory of plate tectonics has explained the formation of mountains like Himalaya or Alps and of the volcanic islands.
Answer:
The formation of the highest mountains of Himalayas and Alps have been created by the bucking up of the geo synclines of tethys sea between Angaraland and Gondwanaland which pushed towards each other and forced the geosynclines to be lifted up forming the mountains. The Mid-Atlantic Ridge is the proof of the edge raised at the joint of continental plates which gives birth to several volcanic islands.

Question 31.
(a) Describe the distribution of volcanoes in the world.
OR
Name the important belts of volcanoes.
(b) What are the influences of volcanoes eruption on man?
OR

What is the importance of volcanoes ?
OR
Mention adverse and beneficial effects of volcanoes.
Answer:
(a) Obviously volcanoes will be found in those regions where the crust of the earth is weak because lava can easily be discharged from such places. These are found in areas of Fold mountains. There are three main belts of volcanoes :

1. **Circum-Pacific Belt :** This belt runs round the Pacific Ocean in Asia and the America. It starts from Cape Horn goes along the Andes and the Rockies to Alaska. From their it turns westwards and passing through Aleutian Islands Japan and Formosa goes to the Philippine Island. Here one branch goes to East Indies that is Java Sumatra and Bameo and other branch goes to New-Zealand. Some of the well known Volcanoes are Karakatoa (on a hilly island between Sumatra and Java) Mayon (N. Philippines) Fujiyama (Japan) Chimborezo and Cotopaxi (Equador S. America).
2. **Mid World Mountain Belts :** This belt starts from the West Indies and passing through the Canavy Islands. The Mediterranean sea Caucasus mountains and Turkey reaches the Himalayas. Mt. Vesuvius (Italy) Mt Stromboli (Sicily) Etna (the Mediterranean sea) and Mt. Pelee (West Indies) are the important Volcanoes of this belt.
3. **African Belts :** This belt follows the Great African Rift Valley. This belt running through Red Sea extends upto Africa. Important Volcanoes are Kilimanjaro Kenya Canary Islands St. Helena (Atlantic ocean).

(b) Adverse effects of volcanoes

1. Most of the recently formed volcanic areas are barren and forbidding to man.
2. The sudden flow of basic lava from an eruptive volcano may cause the total destruction of human life property and crops in the neighbouring areas.
3. The Karakatoa volcanic eruption (in 1883) caused such high sea waves that Karakatoa and several other neighbouring islands were completely destroyed.
4. Volcanoes eruption of Vesuvius in 79 A.D. buried and destroyed completely the two Roman towns of Pompeii and Herculaneum.

Beneficial effects of Volcanoes :

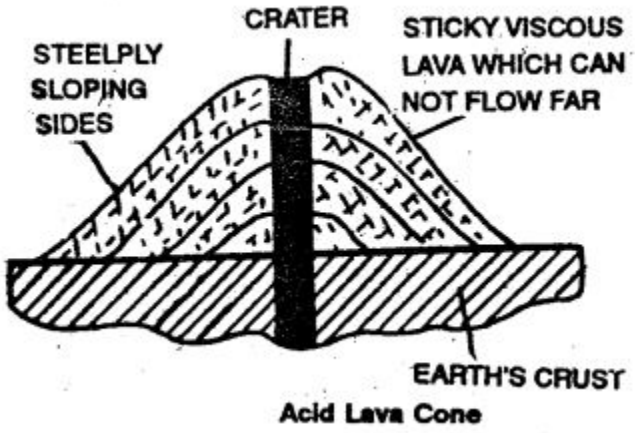
1. The soil made up of lava is very fertile.
2. Lakes are formed when the craters are filled up with waters.
3. Several minerals which are found deep down come up near the surface of the earth.
4. Lava flows have preserved many fossils which throw much light on the past life.

Question 32.
What are the following :

(a) Fissure type of volcanoes
(b) Spine or plug
(c) Caldera
(d) Mud volcanoes
(e) Epicentre
(f) 'Ring of Fire'
(g) Cinder Cone

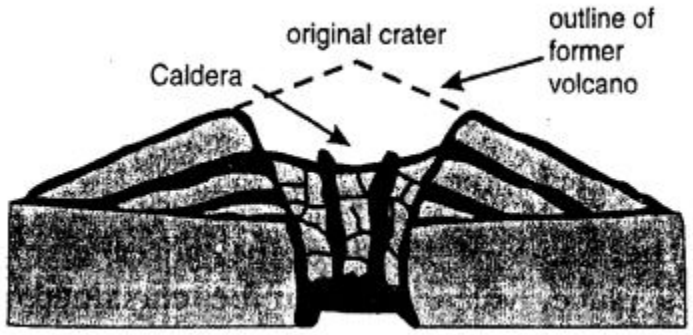
Answer:

(a) Fissure type of volcanoes : A volcano is a vent in the earth's crust out of which hot molten rocks (lava) flow. The hot rocks may also eject violently in the form of solid pieces. If the vent is in the form of a long crack then it is knows as a Fissure Type Volcano. In this type volcanic activity occurs quietly the lava upwells silently and spreads over a large area giving rise to volcanic plateaux and extensive lava sheets.
(b) Spine or plug : Acid lava dome is formed when viscous lava solidifies quickly and gives rise to steep sloping cones. This is known as a spine or plug. Sometimes these spines and plugs are exposed by denudation.



Acid Lava Cone

(c) Caldera : In some volcanoes the summit of the volcano blows up during a violent explosion resulting in the formation of a large depression called a Caldera. Some calderas may have been formed by the collapse of the summit portion. Calderas are occupied by large lakes. The lake in the caldera is called the crater lake. In the state of Oregon in the United States there is a caldera which is about 9 km in diameter.



A caldera

(d) Mud volcanoes : If water which erupts in a volcano is muddy then a conical mound of mud is formed within a creater at the top. This is known as a mud volcano. Such mud volcanoes are found in New Zealand Sicily and other areas of volcanic activity.
(e) Epicentre : The point on the earth's surface directly above the 'focus' of earthquake is called epicentre.
(f) Ring of Fire ; The Circum-Pacific Belt of volcanoes encircles the Pacific Ocean in Asia and the Americas along the weak coastal crust. It is called the 'Ring of Fire' because there are a large number of active volcanoes in it. The belt begins from the volcanic islands of South America and includes the Andes mountains of the Central America and Mexico the western part of the Rockies in the U.S.A. Canada and Alaska.
(g) Cinder cone : When the lava is ejected from a central vent its pieces and fragments solidify round the vent to form a cone. This is known as a Cinder Cone.

Question 33.
Distinguish between the following pairs of terms associated with vulcaniaty

1. Magma and Lava
2. Acidic Lava and Basic lava
3. Cinder Cone and Composite Cone
4. Fissure-type Volcanoes and Central Type Volcanoes
5. Crater and Caldera
6. Laccolith and Lapolith
7. Geysers and Hot springs
8. Active Volcano and Dormant Volcano
9. Folding and Faulting
10. Volcanic Cone and Volcanic Plateau
11. Seismic Focus and Epicentre
12. Dykes and Sills

(b) Distinguish between the following pair of terms associated with crustal movement of the Earth

1. Graben and Horst
2. Tilted Block Mountains and Listed Block Mountains

Answer:
(i) Magma and Lava :
Magma :

1. Magma is hot sticky molten material.
2. It contains solutions of water and gases.
3. It comes out during volcanic eruptions.

Lava :

1. Lava is solidified magma.
2. Gases and water disappear after evaporataion.
3. It cools down as it comes into contact with atmosphere.

(ii) Acidic Lava and Basic lava
Acidic Lava :

1. It is highly viscous lava.
2. It is light coloured like granite.
3. It has low density.
4. It has a high percentage of silica.
5. It flows slowly and results in steepsided cones or lava domes.

Basic Lava :

1. It is highly fine and thin.
2. It is dark coloured like Basalt.
3. It has high density.
4. It is poor in silica.
5. It flows rapidly as thin sheets resulting in shield cones.

(iii) Cinder Cone : Volcanic cones are called Cinder cones when the material erupted consists of cinder and other solid particles. These cones have steep slopes because they consist of particles of large size.
Composite Cone : The volcanoes which start as cinder cone and grown into large volcanic hills with alternating layers of lava and ash are called Composite cones. These cones are formed due to an explosive eruption followed by eruption of lava. Explosive eruption leads to the formation of a layer of ash while lava solidifies as a sheet on the layer of ash. This is followed by a quiet period and then the process gets repeated.
(iv) Fissure type of volcanoes : A volcano is a vent in the earth's crust out of which hot molten rocks (lava) flow. The hot rocks may also eject violently in the form of solid pieces. If the vent is in the form of a long crack then it is known as a Fissure Type Volcano. In this type volcanic activity occurs quietly the lava upwells silently and spreads over a large area giving rise to volcanic plateaux and extensive lava sheets.
Central-type Volcanoes : If the vent in the earth's crust is of such type that the rock

materials come out and mounds hills or cones are formed than the volcanoes formed are known as Volcanoes of the Central type. Vesuvius and Fuji Yama are the best examples of this type.
(v) Crater and Caldera : Crater forms the summit and Caldera the enlarged mouth or the sunken crater at the centre of a volcano. When water accumulates in a crater it forms a crater lake and in a caldera a lake like Taba lake of Sumatra. A crater is formed as a result of overflow of lava and calera as a result of subsidence.
(vi) Laccoliths : Laccoliths are large lens-shaped intrusions which assume a dome shape. They vary in thickness and extent. When laccoliths are exposed on the surface they form low hills.
Lapoliths : Lapoliths are saucer-shaped intrusive layer of solidified magma and sinks as shallow basins in rock-beds.

(vii) Hot Springs :

1. It is a stream of hot water issuing from the ground. The hot water flows unobstructed quietly and continuously.
2. Hot springs are common where joints fissures and porous beds allow the free exit of water to the surface. The water becomes hot when it comes into contact with the heated rocks or upper heated steam lying deep into the earth's crust.

Geysers :

1. It is a hot spring which at regular or irregular intervals throws a jet of hot water and steam into the air.
2. In the case of geyser the fissure or vent connecting the source of hot water to the surface is very narrow which greatly increases the pressure and temperature of the hot water and so when water comes out it rise high into the air.

Question 34.
Give reasons for the following :

1. The Belts of volcanic activity and earthquakes are roughly the same.
2. Basic lava cones are broader than the Acid lava cones.
3. The Circum-Pacific Belt of volcanoes is called 'The Ring of Fire'.

Answer:

1. The belts of volcanic activity and earthquakes are roughly the same because the movement of magma beneath the Earth is the main cause of earthquakes and volcanoes.
2. Basic lava cones are broader than the Acid lava cones because basic lava is very fluid and flows easily for a great distance before it solidifies where as acid lava is highly viscous and flows only for a short distance.

3. The Circum-Pacific belt of volcanoes is called “The Ring of Fire” because there are large number of fire volcanoes in it.

Question 35.

(a) Name one useful feature of vulcanicity other than soil fertility.
(b) Out of the following words write down the four that are connected with volcanic activity.
Karst, crater, drumlin, stalacities, gully, pot holes, ash, basalt, swallow holes, dyke, domes, bluffs.

Answer:

(a) The molten rocks of vulcanicity is of considerable environmental significance other than soil fertility since it is the direct or indirect cause of several classes of landforms. Basic lava weather into more fertile soils.
(b) Crater, ash, basalt, dyke are connected with volcanic activity.

Question 36.
Give reasons for the following :

1. Earth’s movements have modified the Earth’s surface.
2. Earth as a whole does not expand.

Answer:

1. The surface of the earth is undergoing constant change. Some of these changes take place all of a sudden as in the case of volcanic eruptions and earthquakes but most of them are gradual and slow. Due to these changes the sediments which were originally deposited in horizontal layers are found tilted bent broken and twisted. In certain regions the structures which were once at sea-level in the Baltic Sea are now well above the water. Recently it has been found that the larger part of the coast of Scandinavia is rising relative to sea-level but that of the Southern extremity is sinking. Along some coasts submerged forests and various human structures show that the land has not only risen but at places it has also submerged. All this has happened or is happening due to the Earth’s movements. Thus we find that the Earth’s movements have modified the Earth’s surface.
2. About six important Convection Current Cells with over-riding six large plates have been identified below the Lithosphere. The Mid-Oceanic ridges from edges of the plates. For example the Mid-Atlantic ridge is such a ridge. The molten matter from below adds new crust along such’ ridges. Taking the earth as a whole it has resulted in the spreading of the ocean floor at the rate of 1 cm to about 10 cm every year. It is called the constructive plate movement. At the same time the crust at the other edges of the plates in oceanic trenches gets destroyed. It is

called the destructive plate movement Consequently a balance exists and the Earth as a whole does not expand.

Question 37.
Answer the following :

1. Some volcanoes erupt explosively
2. Some volcanoes develop parasitic cones.
3. Hot springs are common in volcanic regions.
4. Earthquakes are common in the belt of young fold mountains.
5. Plate margins are zones of great volcanic activity.
6. Volcanic eruption is one of the main causes of earthquakes.
7. The vent of a volcano when blocked results in explosive eruption.

Answer:

1. Some Volcanoes erupt explosively because the vent of a volcano.may be blocked by some sticky material or rock which causes the explosion.
2. Some volcanoes develop parasitic cones because the main vent grows too high and develops a parasite or a branch l cone.
3. Hot springs are common in volcanic regions because undergound water gets heated by contact with hot magma.
4. Earthquakes are common in the belt of young fold mountains because these mountains are in a state of constant flux.
5. Plate margins are zones of great volcanic activity because collisions of plate margins produce the magma and allow it to escape through a vent, a fissure or a crack.
6. Volcanic eruption is one of the main causes of earthquakes bacause volcanic earthquakes are caused by gas explosions. Such earthquakes occur either simultaneously with eruption or more commonly in the period preceding an eruption.
7. It causes the pressure to build up which results in violent explosion.